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Cardiac arrest secondary to Covid19 pneumonia post full vaccination

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Dear Editor,

We report a case of Covid19 pneumonia associated with out-of-hospital cardiac arrest in a fully vaccinated elderly male.

Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) has been associated with cardiac arrest, with both the incidence and mortality for out-of-hospital cardiac arrest reported increased during the pandemic. [1,2] Qatar's local data suggests a similar pattern with a 37% increase in the incidence during the first wave compared to a matched period in 2019. Survival to hospital discharge fell by half.

Vaccination programs are being introduced worldwide, aiming to reduce morbidity, mortality, and disease spread. [3,4] To date, Qatar has vaccinated around 27% of the population, with the focus initially on higher-risk populations. The Pfizer, BioNTech, and Moderna COVID-19 vaccines have been approved for use by the Department of Pharmacy and Pharmaceutical Control in the Ministry of Public Health. [5]

We report a case of a male in his 70s who was fully vaccinated (Pfizer), with the second dose received eight weeks prior to his presentation. He was unwell for a week with malaise, fever, and upper respiratory tract symptoms. In the two days prior to the presentation he became increasingly breathless, needing assistance for any activity. He collapsed while mobilizing, and bystander cardiac massage was instituted following telephone advice. The attending paramedic team found him to be in asystolic cardiac arrest. Return of circulation was achieved after 2 cycles of advanced life support. The emergency medical services team intubated his trachea without drug assistance, and he was transferred to the hospital. He had a past medical history of hypertension, polycythaemia vera, and a gout, with no known cardiac disease or prior exercise limitations. His medications included aspirin, allopurinol, hydroxyurea, celecoxib, and nifedipine. On arrival, the tracheal tube position was confirmed, and he was noted to have an oxygen saturation of 92% on 100% oxygen with 5 cm of water positive end-expiratory pressure. He had a blood pressure on the arrival of 129/74 mmHg and a pulse 102. His Glasgow coma score was 3 with bilateral 3 mm pupils. Crackles were heard throughout the chest, and black stool was identified per rectum.

A 12-lead electrocardiogram showed sinus rhythm with left axis deviation and T wave inversion in leads I, aVL, V5, and V6. An Arterial Blood gas showed a profound metabolic acidosis (PH 7.75, BE −28, lactate 17 mmol/L), and a bedside echo identified good ventricular function with no regional wall motion abnormalities. He was profoundly hypoxic with arterial partial pressure of oxygen of 56 mmHg on 100% oxygen, tidal volume 420 mL, RR 30b/min, PEEP 10 cm water, and an I:E ratio of 1:1.3. A Chest radiograph (Fig. 1) and a thoracic ultrasound (diffuse B lines, thickened and irregular pleura, no pleural effusion, subpleural consolidations) were suggestive of Covid 19 pneumonia. The patient became hypotensive and a norepinephrine infusion was commenced. His Haemoglobin was unchanged from a sample taken one month prior (15.2 g/dL), his creatinine was 152 micromol/L (baseline 116), and his troponin was 57 ng/L (normal 3–15). A Computed tomography and further blood investigation were unremarkable. Towards the end of day 1, he developed bradycardia and asystole, which were refractory to resuscitation.

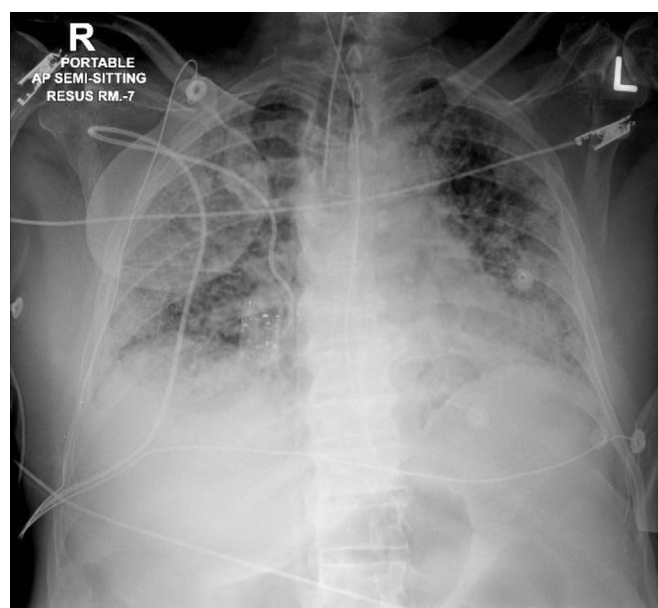


Fig. 1. X-ray Chest showing diffuse B-lines, thickened and irregular pleura, subpleural consolidations.

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A COVID-19 infection was confirmed using the Xpert® Xpress SARS-CoV-2 (Cepheid, USA) targeting the E and N genes with respective positive results of 26 and 27 Cycle Threshold Values. Serology was tested using the Elecsys Anti-SARS-CoV-2 (Nucleoprotein Antibody) and Elecsys Anti-Sars-CoV-2S (Spike) antibody (Roche, Switzerland). A blood sample confirmed SARS-CoV-2 infection with Nucleoprotein antibody of 28.8 U/mL and Spike antibody of >250 U/mL detected; the high Spike antibody was in keeping with a recent vaccination.

We believe the cardiac arrest was most likely secondary to hypoxia-related to Covid-19 pneumonia. We are unaware of other cases of probable covid related cardiac arrest secondary to active disease in fully vaccinated people. The vaccine may have been less effective and the resulting disease more serious in this patient as a consequence of age and polycythaemia vera. [6] We report this case to highlight the ongoing risk to our fully vaccinated patients and health care workers. Personal protective equipment (PPE) remains key to the protection of health care workers with health care workers in the US and UK accounting for around 10–20% of all cases in the first wave of Covid19 pandemic, a hazard ratio of around 3.4 compared to the general population. [7] We suggest PPE should be worn for assessing patients while there is active Covid19 disease withing the communities served.

Conflict of interest

None.

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